

REMARKS

Claim 12 has been amended to correct an obvious typographical error.

Claims 1-26 were rejected under §112, first paragraph, with respect to the “comprising” for the reasons stated in the office action. While the applicant does not agree with the examiner’s position for the reasons stated in the previous response that use of the phrase “comprising” in claim 24 introduces new matter, claim 24 has been amended to recite “consisting of” to reduce issues on appeal.

Claims 1-26 were rejected under §112, first paragraph, with respect to the “abrasion-resistant coatings” and “anti-reflective coatings” for the reasons of record. Applicant traverses this ground of rejection.

It is black letter law that a statement in the specification as broad as the broadest claim satisfies the enablement requirement unless (1) the examiner properly challenges the truth of the statement or (2) undue experimentation would be required to practice the invention as claimed. See In re Marzocchi, 169 USPQ 367 (1971) and In re Borkowski, 164 USPQ 642 (1970). The examiner must do more than merely question operability or express doubts, and instead must set forth factual basis for doubting the applicant’s assertions. In re Gaubert, 187 USPQ 664 (1975). Furthermore, the function of the claims is to set limits and not to teach in detail how to practice the invention. See, e.g., Ex parte Pontius et al., 169 USPQ 122 (1970).

In this case, the Summary of Invention and specification certainly contains a statement as broad as the broadest claim as to abrasion-resistant coatings and antireflective coatings. Rather than providing detailed reasoning to challenge the truth of the statement made in the specification, the examiner has merely made a conclusory allegation for lack of enablement. Specifically, the examiner asserted that

While being enabling for the (1) abrasion-resistant coating derived from the composition of claim 12 and (2) an inorganic antireflective coating having monolayer with optical thickness of $\lambda/4$ where λ is a wavelength between 450 and 650 nm or having multilayer

film comprising three layers with a combination optical thickness $\lambda/4.\lambda/2.\lambda/4$ or $\lambda/4.\lambda/4.\lambda/4$, respectively, or equivalent multilayer with similar optical thicknesses (see page 13, lines 21-29), does not reasonably provide enablement for any abrasion resistant coating and any antireflective coating (e.g., U.S. Patent 4,904,525 and Declaration of Philippe Roisin). The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims. The specification as filed does not teach or suggest hard coating such as organic resin coating, inorganic coating etc. All coating has somewhat abrasion resistant. Addition of coating improves abrasion of stack over stack having no coating. The claimed invention does not claim minimum abrasion resistant. Also there is no disclosure of an anti-reflective coating other than inorganic.

(Office Action dated 3/22/04 at page 3.) However, what the examiner has done is simply point to certain embodiments in the specification, assert, without any foundation, that the claims should be limited to these embodiments, and then uses circular reasoning to explain the examiner's basis for the §112, ¶1 rejection. The examiner's conclusory allegations certainly do not rise to the level of detail required by the relevant case law. It can be seen that examiner has done no more than allege the claim should be limited to the representative embodiments in the specification. Thus, the examiner has not properly challenged the truth of statement and therefore fails the first prong of the tests identified above with respect to the relevant case law.

More specifically, with respect to the abrasion-resistant term, in stating that any coating will provide abrasion resistance, the examiner fails to take into account the knowledge of one of skill in the art as well as the support in the specification for the term. The applicant reiterates that the examiner is incorrect in stating that *any* abrasion-resistant coating will improve the abrasion resistance of the final product. Thus, impact resistance enhancing layers having low glass transition temperature (T_g) and/or made of thermoplastic materials or with low cross-linking will usually lower the abrasion resistance of the final product.

Also, the function of the abrasion-resistant coating of the invention is clearly defined since it must be a coating which enhances the abrasion resistance of the initial article. Please note that the abrasion resistance test is disclosed in the specification at page 15, lines 3 to 30. Consequently, the skilled person in the art has more than adequate disclosure and information needed to select an abrasion-resistant coating once the base substrate has been chosen.

Furthermore, several documents (US and EP patents) have been previously submitted and which show that abrasion-resistant coatings are well known in the art. In particular, the following references have been previously brought to the attention of the examiner: US Patents 3,968,309; 3,986,997; 4,199,421; 4,211,823; 4,294,950; 4,355,135; 4,500,669; and 5,049,321; EP 13 939, and EP 614 957. These references describe, for example, acrylic abrasion-resistant coatings and silicone type coatings. These documents also evidence the knowledge that one of ordinary skill in the art attributes to an abrasion resistant coating.

Moreover, the examiner clearly failed to suggest that undue experimentation would be needed to practice the invention with respect to the abrasion-resistant coating term. Indeed, the examiner does not appear to even discuss this second prong of the case law discussed above.

With respect to the anti-reflective term, the examiner simply states, incorrectly, that the specification supports only organic anti-reflective coatings.

The examiner is incorrect in stating that only inorganic anti-reflective coatings are disclosed in the specification. Organic anti-reflective coatings are specifically mentioned at page 13, lines 13 to 20. Furthermore, examples 4, 5, and 6 concern such organic anti-reflecting coatings and disclose anti-reflective layers obtained from gamma-glycidoxypyril trimethoxysilane, which contains an organic glycidoxy group which is not eliminated when preparing the layer and instead remains when the layer is cured. In addition, examples 4-6 show sol/gel processes entirely different from the vapour phase deposition used to obtain the purely inorganic layers of the other examples of the invention.

As has been previously stated, applicant reiterates that such coatings are well known by the skilled person. We further note that a definition of abrasion-resistant coatings is given in the specification page 10, lines 14 to 16 (“...a coating which improves the abrasion resistance of a layer stack as compared to the same layer stack without the abrasion-resistant coating.”), as well

as other passages such as the very passages cited by the examiner, are believed to provide adequate support for the original claim language.

Please note that claim 1 recites that the abrasion-resistant coating is a silicone based coating or an acrylic based coating.

Finally, the examiner clearly failed to suggest that undue experimentation would be needed to practice the invention with respect to the anti-reflective coating term. Indeed, the examiner does not appear to even discuss this second prong of the case law discussed above.

In view of the foregoing, applicant respectfully requests that the §112, ¶1 rejection be withdrawn.

The Obviousness Rejection

The office rejected claims 1-3, 5, 6, 10, 11, 13, 15, 18, and 20-24 under §103(a) as being unpatentable over Taniguchi et al. (U.S. Patent No. 4,904,525). This rejection is traversed for the following reasons.

In the first instance, applicant disagrees with the characterization of the Taniguchi et al. in the final action. Applicant points out that the layer which the examiner considers to have anti-reflective properties actually degrades the anti-reflective characteristics of the article on which it is deposited, as it has been expressly shown in comparative example 3 of the ROISIN declaration.

Furthermore, as stated in the prior response, Taniguchi et al. discloses an anti-reflection optical article which comprises a substrate such as polystyrene, polycarbonates; a hard coating; a top film of fluorosilicone having an average Fe/Si ratio ranging from 0.02 to 10; and a second fluorine-containing organopolysiloxane-based film (1nm to 30nm thickness) having a F/Si ratio of less than 80% than that of the top film.

The second fluorosilicone film is said to be an antistatic film.

In the rejection, the office assumes that the second fluorosilicone film acts as an anti-reflective film and the fluorosilicone top film as an impact-resistant primer interlayer. However, as demonstrated in the grandparent case and as explained herein, the second fluorine-containing organopolysiloxane based film of Taniguchi et al. cannot be considered as an anti-reflective layer.

The stackings shown in annex 1, previously submitted and of record, were modeled by applicants using commercial software "Film Star Design" of FTG Software Associates-Princeton New Jersey. Annex 1 includes the Declaration of ROISIN and related information that were submitted previously in the grandparent case.

Calculations were made using a light beam having an incident angle of 15°.

The modeled stacking were the following:

- Stacking 1: corresponds to a reference stacking comprising a substrate and a hard coat according to example 1 of Taniguchi et al. but without the anti-reflective coating.
- Stacking 2: corresponds to the stacking of example 1 of Taniguchi et al. and comprises substrate / hard coat / top film (anti-reflective film).
This stacking is said to have an experimental transmission of 96.1%.
- Stacking 3: comprises substrate / hard coat / top coat of fluorosilicone (anti-reflective coating) / second fluorine containing organopolysiloxane based film (antistatic coating). Three thicknesses of the antistatic film were considered, namely 1 (a), 15 (b) and 30(c) nm.
- Stacking 4: comprises substrate / hard coat / second fluorine containing organopolysiloxane-based film (antistatic film). Three thicknesses of second fluorosilicone film were considered, namely 1nm (a), 15nm (b) and 30nm (c).

Refractive index value of the second fluorosilicone film was estimated from f/Si ratio of 0.04/1.

Results:

For each stacking, mean reflexion values R_m (per face) (for the entire visible spectrum 400-700nm) and mean transmission value T_m were determined assuming that the two major faces of the substrate were coated with the corresponding layers.

	1	2	3a	3b	3c	4a	4b	4c	S
$R_m(\%)$	5.06	1.30	1.31	1.63	2.28	5.06	4.85	4.24	5.47
$T_m(\%)$	89.87	97.40	97.38	96.74	95.43	89.87	90.30	91.52	89.06

S corresponds to an uncoated substrate.

For the skilled person, a coating which does not lower the reflexion value (per face) to at least 2.5% is not considered as an antireflective coating.

In view of the above results, it is submitted that the second fluorosilicone film (antistatic coating) cannot be considered as an antireflecting coating since all stackings 4) include only the hard coat and the second fluorosilicone film have R_m values per face (namely at least 4%) much higher than 2.5% which is the upper limit value for considering the coating as having antireflective properties. Furthermore, stacking 3 shows that the presence of the second fluorosilicone film (antistatic) deteriorates the antireflective properties of the underneath antireflective top coating.

The fact that for stacking 2 (example 1 of the reference) the calculated value of T_m (97.4%) is higher than the experimental value (96.1%) given in the Reference should not be surprising. In fact, there always exists slight variations since the actual stacking is usually not perfect contrary to modeled stackings. Further, modeled calculations were effected using an incident angle of 15° and integrating over the full 400-700nm range. In Taniguchi et al., other conditions may have been used.

Nevertheless, the above stacking modelization gives a meaningful comparison of the properties of the different stackings.

In conclusion, the antistatic second fluorosilicone film of the Reference is not an antireflective coating. In Taniguchi et al., the antireflective properties are attributable to the first fluorosilicone top coat.

Consequently, there is no disclosure or suggestion in Taniguchi et al. of an impact-resistant primer layer between a hard coat and an antireflective coating.

Furthermore, the skilled person cannot find in Taniguchi et al. any motivation for introducing between a hard coat and an antireflective coating an intermediate impact-resistant primer layer.

In the prior office action, the examiner stated that applicant's comments were not persuasive because

Claims 1-21 are not rejected as stated in remark [sic] over Taniguchi et al. Taniguchi et al's articles is [sic] an anti-reflection optical article. Further there is nowhere in the present application stated argued [sic] upper limit of R_m value to consider the coating as having antireflective properties. There is no data showing that the claimed invention has R_m values at or below 2.5%.

However, the ROISIN Declaration rebuts this proposition in stating,

For the skilled person, a coating which does not lower the reflexion value (per face) to at least 2.5% is not considered an antireflective coating. This 2.5% value is the limit typically considered by skilled persons as characterizing an anti-reflective coating in the International standard ISO/DIS 8980-4 which is presently under discussion for approval. This information, which is of record, shows that a R_m value of 2.5% per face is the upper limit for considering a coating as having antireflective properties. Also note that since the date of the ROISIN Declaration, the referenced International standard was adopted, as has been made of record in the application family. Likewise it follows that by reciting an antireflective coating in the claims, one of skill in the art recognizes that in order to have this property, the coating must have a R_m value of no more than 2.5% per face even though this value is not expressly stated in the specification.

Again, as demonstrated in the ROISIN Declaration, the second fluorine-containing organopolysiloxane based film of Taniguchi et al. cannot be considered as an anti-reflective layer. Consequently, there is no disclosure or suggestion in Taniguchi et al. of an impact-resistant primer layer between a hard coat and an antireflective coating.

It should be kept in mind that the data in the ROISIN Declaration is submitted to show that Taniguchi et al. does not render the particular stacking arrangement recited in the claims obvious. The stacking arrangement in Taniguchi et al. does not provide the anti-reflective

properties inherent in the claimed arrangement. It is thus submitted that the Declaration provides objective evidence that the stacking arrangement of the claimed invention provides properties not taught or suggested by Taniguchi et al. Namely, Taniguchi et al. fails to teach or suggest the claimed stacking arrangement as well as the antireflective properties associated with the claimed arrangement. Furthermore, the skilled person cannot find in Taniguchi et al. any motivation for introducing an intermediate impact-resistant primer layer between a hard coat and an antireflective coating. This explains why the ROISIN Declaration is relevant, why reciting 2.5% in the claim is not necessary, why the data is probative, and why the R_m value need not be recited in the claims.

In view of the foregoing, the rejection under §103 should be withdrawn.

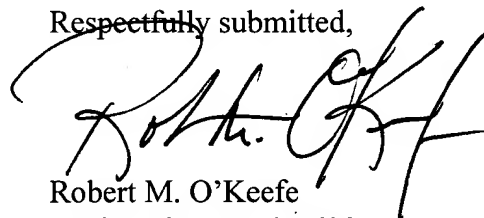
CONCLUSION

In view of the foregoing, it is submitted that the claims are in condition for allowance. Accordingly, favorable reconsideration and Notice of Allowance are courteously solicited.

A request for an extension of time is included herewith. If the request is missing, consider this to be a request for the same. No extension of time is believed to be needed in connection with the filing of this paper. If any fees for such extension of time is needed, please deduct any required fee from deposit account 10-1205.

Should any fees under 37 CFR 1.16-1.21 be required for any reason relating to the enclosed materials, the Commissioner is authorized to deduct such fees from Deposit Account No. 10-1205. The examiner is invited to contact the undersigned at the phone number indicated below with any questions or comments, or to otherwise facilitate expeditious and compact prosecution of the application.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "R. O'Keefe", written over the typed name.

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